

remarks.

The Examiner rejected claims 12-14 under 35 U.S.C. § 112, second paragraph, as indefinite. The Examiner cited the language “wherein fewer locations in the forwarding lookup are located and accessed than bits in the associated destination address” as being indefinite. While Applicant believes that this language is sufficiently clear to satisfy the definiteness requirement, Applicant has altered this language in a manner that should avoid any ambiguity as to what is now being claimed. Accordingly, Applicant submits that this rejection has been rendered moot and should be withdrawn.

The Examiner rejected claims 1-5, 15-18, and 24-28 under 35 U.S.C. § 102(b) as anticipated by IBM Technical Disclosure Bulletin, vol. 36(2), pp. 151-153 (“the IBM reference”). This rejection, however, is improper. Anticipation under section 102 requires that a single reference contains each and every limitation either expressly or inherently. Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc., 246 F.3d 1368, 1374 (Fed. Cir. 2001). The IBM reference does not contain each and every limitation of the claims.

For example, claim 2 (as originally filed) recited that the selected storage location contains an instruction regarding how the device should forward the network layer packet and that the instruction is executed in the employing step. These limitations were not addressed by the Examiner sufficient to satisfy “anticipation”. The Examiner generally states that “each router inherently contains an instruction regarding how an IP packet containing its destination address should be forwarded.” Even if this were true, this statement does not address the limitations of claim 2.

Independent claims 1, 15, and 24 were amended to contain limitations similar to those found in originally filed claim 2. For example, claim 1 recites, among other things, selecting a first storage location based on a first set of bits contained in the header data and executing an instruction contained at the first selected storage location. Because claim 2 was improperly rejected as being anticipated by the IBM reference, claims 1, 15, and 24 cannot be anticipated. Further, claims 2-5, 16-18, and 25-28 cannot be anticipated by the IBM reference as they depend from claims 1, 15, and 24, respectively.

The Examiner also rejected claims 6-14, 19-23, and 29-31 under 35 U.S.C. § 102(b) over Waldvogel. Again, this rejection is improper because the Waldvogel reference does not contain each and every claim limitation expressly or inherently.

Claim 6 defines a method containing a series of steps. The Examiner fails to show how the Waldvogel reference contains any teaching of “the first entry in the first forwarding lookup provides direction to a second forwarding lookup,” as recited in claim 6. This limitation indicates a relationship between the first forwarding lookup and the second forwarding lookup. No such limitation has been noted by the Examiner. Instead, the Examiner states that “[t]he idea is to look for all prefixes of a certain length L using hashing and use multiple hashes to find the best matching prefix-BMP, starting with the largest value of L (first entry) and working backward (to locate a second entry).”

Such a teaching (if it even exists in the Waldvogel reference) is simply inadequate to support “anticipation” of claim 6. Claim 29 includes a similar limitation and therefore also cannot be anticipated.

Claim 12 has been amended to re-state what is being claimed. Claim 12, as amended, now recites that “the number of bits in the first set of bits is less than the total number of bits in the destination address.” The Examiner does not appear to point to any teaching in the Waldvogel reference as corresponding to this limitation. Accordingly, the Waldvogel reference cannot anticipate claim 12.

Claim 19 defines an apparatus containing several elements, including a processor for executing the instructions in the entries of the lookup structures to forward the IP packets. The Examiner does not show any teaching corresponding to the execution of instructions in such entries. Accordingly, the Waldvogel reference cannot anticipate claim 19.

Claim 21 defines a switch/router containing several elements, including a first lookup array, a second lookup array, a third lookup array, and a forwarding engine. The Examiner completely fails to show any of these limitations (as claimed in claim 21) in the Waldvogel reference. Instead, the Examiner simply points to teachings that are not completely applicable and fails to address limitations with specificity by either ignoring them or using the term “inherently”. Such a rejection ignores the Examiner’s burden of

showing each and every claim limitation in the reference to establish "anticipation". If such a showing cannot be made, then the section 102 rejection must be withdrawn.

The section 102 rejection of claims 7-11, 13, 14, 20, 22, 23, 30, and 31 should also be withdrawn as these claims depend from independent claims which are allowable for the reasons discussed above.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

Applicant request reconsideration and reexamination of this application and allowance of the pending claims for the reasons discussed above. If the Examiner does not believe that the claims are in condition for allowance, Applicant requests that the Examiner telephone the undersigned at (408) 745-2150 to discuss any outstanding issues. Any new rejections made against the pending claims should be set forth in a non-final Office Action since the section 102 rejections contained in the current Office Action were improper due to lack of anticipation.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 50-1763.




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PATENT TRADEMARK OFFICE

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Respectfully submitted,

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VERSION WITH MARKINS TO SHOW CHANGES MADE

1. (Amended) In a device for forwarding data packets, the device having a
storage memory containing storage locations, a method comprising the steps of:
receiving providing header data for a destination of a network layer packet;
selecting a first using multiple bits from the header data as an index to
locate a selected one of the storage locations that provides information regarding
how the device should forward the network layer packet based on a first set of
bits contained in the header data; and
executing an instruction contained at the first selected storage location.
employing the information provided by the selected storage location to forward
the network layer packet toward the destination.
2. (Amended) The method of claim 1, ~~wherein the selected storage location contains an~~
~~instruction regarding how the device should forward the network layer packet and~~
~~wherein the instruction is executed in the employing step~~further comprising the step of
selecting a second one of the storage locations based on the executed instruction and a
second set of bits contained in the header data.
3. (Amended) The method of claim 2, ~~4 wherein more than a byte from the destination~~
~~address is used as the index~~further comprising the step of forwarding the network layer
packet based on the contents of the second selected storage location.
4. (Amended) The method of claim 2, ~~4 wherein the network layer packet contains a~~
~~header and wherein the method further comprises the step of extracting information~~
~~address from the header~~further comprising the step of selecting a third one of the
storage locations based on contents of the second selected storage location and a third
set of bits contained in the header data.
6. (Amended) In a device for forwarding an Internet Protocol (IP) packet toward a
destination having a destination address containing a sequence of bits, a method
comprising the steps of:
~~providing a first forwarding lookup and a second forwarding lookup;~~
~~using a first set of a prefix of multiple bits from the destination address of~~
~~the IP packet as an index to locate a first entry in the~~a first forwarding lookup;

where the first entry in the first forwarding lookup provides direction to ~~the~~ a second forwarding lookup, using a ~~next sequential~~ second set of bits ~~following the prefix in~~ from the destination address as an index to locate a second entry in ~~the~~ a second forwarding lookup, ~~said second entry having contents~~; and
employing ~~the contents of the second entry in forwarding the IP packet,~~
~~toward the destination address.~~

9. (Amended) The method of claim 6, ~~wherein the method further comprises the step of providing a third forwarding lookup and wherein the step of employing the contents of the second entry comprises identifying that~~ the a third forwarding lookup should be used in forwarding the IP packet.

10. (Amended) The method of claim 9 wherein the method further comprises the steps of employing a ~~final sequential~~ third set of bits ~~in~~ from the destination address ~~following the next sequential set of bits in the destination address~~ as an index to locate a third entry in the third forwarding lookup and employing the contents of the third entry in forwarding the IP packet, ~~toward the destination address.~~

12. (Amended) In a switch having a memory in a network that employs a connectionless network protocol, a method of forwarding a data packets, each having an associated destination address comprising the steps of:

providing a forwarding lookup with locations in the memory, wherein the locations are indexed by multiple bits; and

for each data packet to be forwarded, employing a first set of bits in the destination address to locate and access at least one location in the forwarding lookup to forward the data packet, wherein ~~fewer locations in the forwarding lookup are located and accessed than bits in the associated destination address~~ the number of bits in the first set of bits is less than the total number of bits in the destination address.

15. (Amended) A device for forwarding received network layer packets ~~to destinations~~ wherein the packets include header data, comprising:

a first lookup structure ~~holding~~ storing entries that provide instructions regarding forwarding of ~~information regarding how to forward network layer packets to their destinations~~, said entries being indexed by multiple bits; and

a forwarding controller for using ~~multiple~~ a first set of bits from the header data of each received packet as an index ~~indices~~ to locate an entry ~~entries~~ in the first lookup structure and for ~~using the entries~~ executing the instruction stored at the located entry in the first lookup structure ~~in directing the forwarding of the network layer packets to the destinations.~~

16. (Amended) The device of claim 15 wherein the forwarding controller includes a processor for executing instructions and wherein the entries on the first forwarding lookup structure includes instructions to be executed by the processor to provide information regarding how to forward network layer packets ~~to their destinations.~~

21. (Amended) A switch/router for directing IP packets toward destinations, comprising:

- a first lookup array containing entries indexed by leading bits of destination addresses for IP packets, each entry containing an instruction to assist in forwarding an IP packet towards a destination;

- a second lookup array containing entries indexed by a successive set of bits that follow the leading bits in the destination addresses for IP packets, each entry containing an instruction to assist in forwarding an IP packet towards a destination;

- a third lookup array containing entries indexed by a set of trailing bits that follow the successive set of bits in the destination addresses for IP packets, each entry containing an instruction to assist in forwarding an IP packet; and

- a forwarding engine for forwarding IP packets to destinations, wherein for each IP packet being forwarded, said forwarding engine accesses at least one entry in the lookup arrays indexed by a portion of a destination address for the IP packet being forwarded and executing the instruction contained in the entry that is accessed.

24. (Amended) In a device for forwarding data packets wherein the device includes a storage having storage locations, a computer-readable medium holding computer-executable instructions for performing a method, comprising the steps of:

- using multiple bits from header data for an network layer packet as an index to locate a selected one of the storage locations that provides an instruction ~~information~~ regarding how the device should forward the network layer packet; and

~~employing the information~~ executing the instruction provided by the selected storage location to forward the network layer packet toward the destination.